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## Revamping a Research Library Website from a Content Management Software to an Integrated Library Management Software

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## **Revamping a Research Library Website from a Content Management Software to an Integrated Library Management Software**

**Abstract:** An advance in information and communication technology has challenged all the service sectors including libraries and information centres. Providing reliable information services through library websites that is easy and intuitive for the user is a major concern for the entire library professional. This work is a case study on the library website of the Indian Institute of Astrophysics. Formerly the library had Libsys 4.0 as the library automation software and presently it has been migrated to Koha 20.05. The study aims to explore the factors the institute takes into consideration for renovating the website. The new website of IIA Library is a visual example of an integrated library management system where all the spectrums of the library modules are brought down under a single platform designed in Koha. The study design is based on descriptive and exploratory analysis of the former and the later website. The case-study method of the study brings out the possible methods exercised in the process of data correction and migration from LibSys to Koha. For libraries and information centres or other similar institutes planning for a website migration, this case study can provide a point of initiation and culminate the important points required for the revamp.

**Keywords:** User interface, Navigation, Aesthetics, Evaluation

## **Introduction**

The designing of a website for any organization or institute is found to predominantly focus on the extent of fulfilment of the respective organizational goal and the services it provides. But designing a website for entirely an information-based sector is a little different. A library or information centre along with matching the organizational goal and objectives it takes into account the complexity of information architecture that contains intricate informational and exchange functions.

A plethora of information like guidelines, suggestions and methods related to website designing is offered in various information sources. Several numbers of ways are found to evaluate the design aspects. Aligning to that information, the library and information centres try to formulate their websites. Generally, a research library website is assumed to contain a well-defined user interface, accommodating the user need, scholarly information guides, and ways to multiply user access to the library.

The Indian Institute of Astrophysics is a premier DST funded institute that facilitates worldwide research on Astronomy and Astrophysics. The library of IIA houses resources from 1786 that are entirely dedicated to the scholarly community of the institute. The library website of IIA acts as the medium of exposure of all the library resources and services available under a single platform. Since the implementation of the institute website, the library is maintaining its webpage in the Drupal content management software where Libsys was used as the OPAC system. Recently the library website has been moved to Koha, where all the web pages are integrated under a single platform.

Generally while creating any commercial website, the involvement of highly skilled team workers with copious time and funding is required. Commercial websites in contrast to a library website assign a team of content creators, designers, decision-making team to reach the services to the users. This case study outlines how a small library team could completely undertake their fragmented Drupal-based web pages into an integrated Koha based website to a more secure, appealing, and organized form of information source.

## **Objectives**

The study aims to explore the areas that the library took into account while revamping the library. It points out the need for a complete overhaul from fragmented content management web pages to an integrated library management website.

## **Methodology**

The study is the comparative assessment of the old website with the new based on some pre-defined factors of evaluation. A closed ended questionnaire is constructed (appended at the Appendix) which was used for surveying and informal interviewing of the users and staffs of

IIA. The questions were designed based on the nine factor evaluation factor as discussed hereafter. The case study is segmented into four main heads, initiated by tracing back into the old website, then finding out the lacunas and the need for the complete revamp. The third stage is the planning aspect and the last is the implementation. The study gives descriptive explanation of the areas based on which the new website is created. The areas cover the backend process of data migration and data formatting to make it compatible in the Koha platform.

## Tracing back to the old website

The Drupal-based website had a very simple interface where the web pages were structured entirely on the right navigation. Including the home page, a total of thirteen web pages are found which could be accessed through multiple clicks. Coming to the aesthetic aspect, the use of colour, fonts, and photographs were used in minimal and text-based web pages were found in the majority.



Figure1: Snapshot of the old website

## Necessity of restructuring

The complete overhaul of the IIA library website was required to maximise the exposure of the existing as well as newly implemented services for the researchers. During the restructuring, the skills of the working library professionals are evaluated and from the results of the evaluation, the gap areas of the services were noted for further improvement.

The revamp team was super headed by the three-tier management team. All the primary works like website content creation, data capturing, data formatting, data filtering, and data collation

were distributed among the lower level of management, then all the newly produced as well as the existing information was compared and reviewed in a step process by the second managerial level. The last task of software installation, data migration, and website designing was carried out by the top level of management. It is to be noted that there was a continuous evaluation of each step through the agile process of management to check the adaptability, vulnerability, transparency and increase the velocity of the work process.

The revamp team mainly focused on the trend on digital librarianship, the user needs, and the catalogue and website design and maintenance. The revamp was initiated by checking the extent of matching the library's vision and mission with the information provided on the website. This further documented the weak areas that the team wanted to rectify in the new website. From the process four areas of improvement were identified that are discussed in the following heads:

### **Nine factor evaluation process:**

Studies on website design parameters points out user-centric approach is the most widely used, where the design of pages remain simple yet elegant to convey the information in an efficient way is indicated Schaik (2007). The former website of the library lacked behind in its design aspect that varied from the use of colour, text identification of the graphics used in each page, fonts, pictures and various tools like library guide, catalogue, etc., clear navigation and functional consistency. These lacunas were the reason for an inability to access the information and detracted users from the feel of using an integrated, cohesive library website.

Maintaining the aesthetic is readily dependent on the design of the homepage. The study made by Moshagen and Thielsch's describes factors influencing Aesthetics in HCI (Human-Computer Interaction), and are classified under Colour, Simplicity, Diversity, and Craftmanship, Unity, Complexity, Intensity, Novelty and Interactivity (Moshagen, Morten, and Meinold T Thielsch, 2010). The present study tries to explore the modifications done in the new website based on these nine factors.

- **Colour-** In the research study on choice of color preferences in cultural diversification, found that “Blue” is the worldwide culturally accepted colour and prefers the use of the same and its shades in website designing (Chattopadhyay A. 2003). The old website had the same combination of inconsistent colour shades of black and blue as given in the main website of IIA. Whereas the new one is found to have a perfect blend of white background, with navigation bar in different shades of blue. Too much use of varied colour is not found providing a consistency in the look and feel effect. The font colour is also kept simple in a shade of black on the white background.

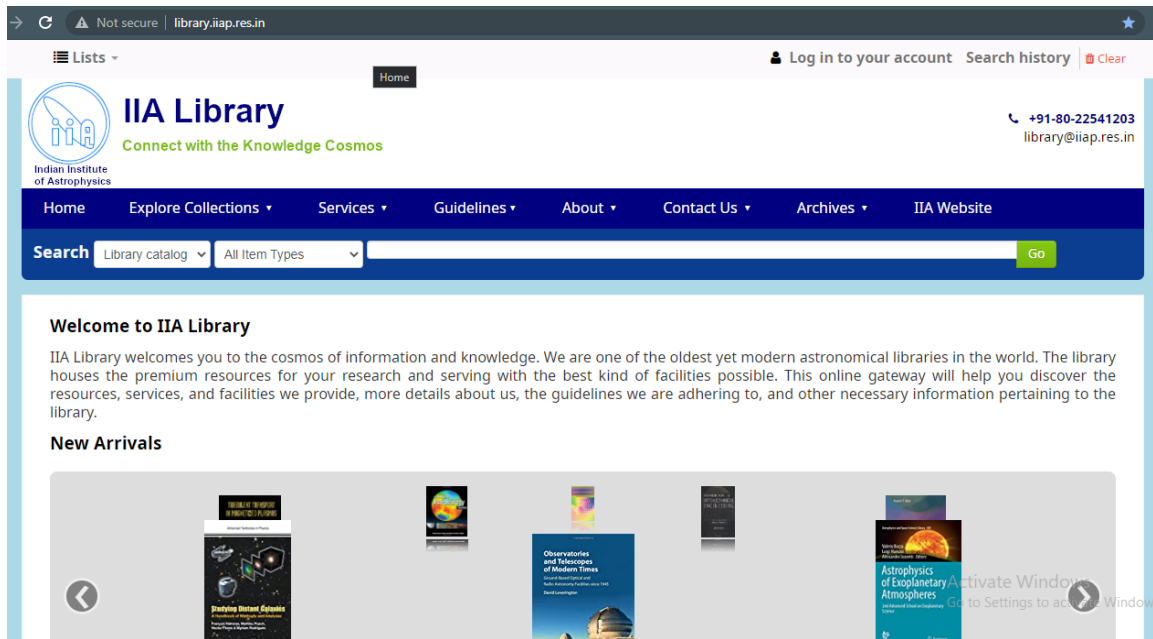


Figure 2: Snapshot showing colour contrast in the new website

- **Simplicity-** Judicious use of content is found on each page so that the consistency in scaling is maintained. The scalability factor is important as the team wanted the web pages to be visually flexible which would enhance multimedia access to the website. 1:1 ratio is found in content and picture distribution i.e., a single graphic is used for a single heading. According to the Gestalt principle (GP), the visual system of the website is affected by the structure of grouping that includes common fate, good continuation, proximity and similarity. Resulting from this, perceptual organization of visual pattern of information arise (Wagemans...et al., 2012). Based on this principle the elements of the homepage are grouped according to GP proximity, to enhance the acceptance of user experience. Inside the navigation bar, eight major elements are lined up where users can get all necessary information under a single column. The advantage of building the new website in the Koha platform is that users can have access to the navigation elements in all the web pages i.e. they don't need to revert to the homepage for each time click different options.

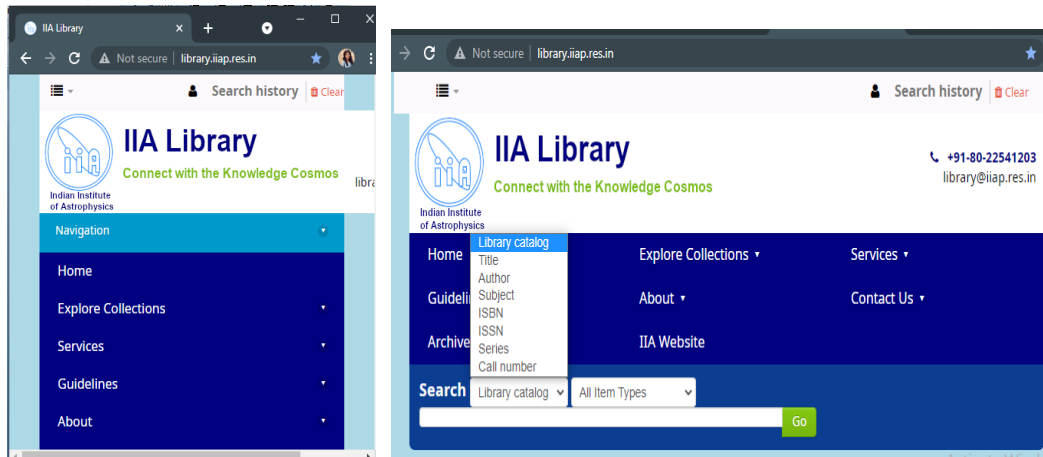


Figure 3: Snapshot showing scalability feature in the new website

- **Diversity-** Compared to the old website the new website comprises varied and multiple components making the website more diverse and informative. For instance, if we consider the home page, we find the body of the page is designed with a slider having information related to new arrivals and followed by a section of "Announcements" from where users can find the news and update. The number of text areas on each page is adjusted keeping consistency with the colour gradient and saturation of colours to maintain the visual dynamics of the user.

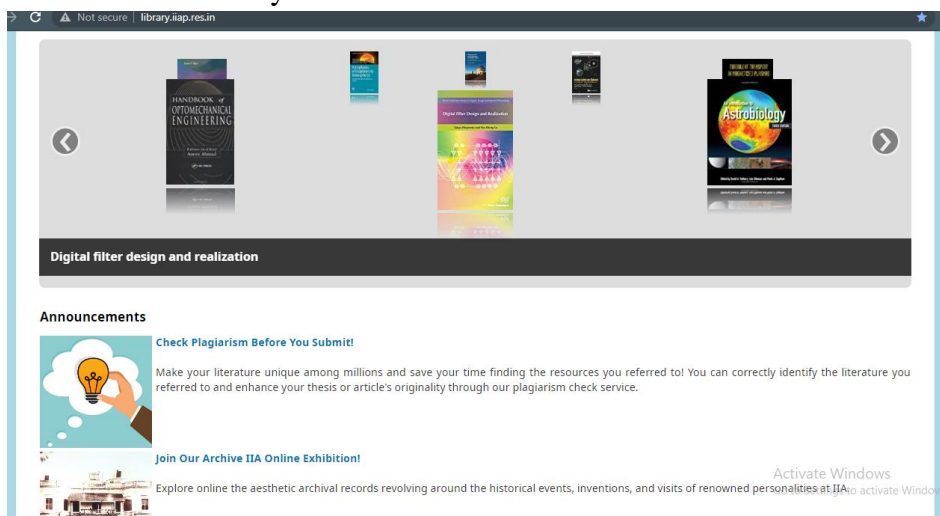


Figure 4: Snapshot showing diversification of component in homepage

- **Craftsmanship-** It is often regarded as a skilful and coherent way of integrating design elements (Noponen, Sampo, 2017). The new website shows some areas of efficient craftsmanship putting similar kinds of information under a single option. In the navigation bar, all the options are arranged according to the prioritization of their access frequency. It is often found that research institute like IIA prioritizes their search based on the collection development and the research support services available in the library.

Accordingly, the collection, collection types, various services are sub-arranged in the dropdown menus in the hierarchical order of recall value.

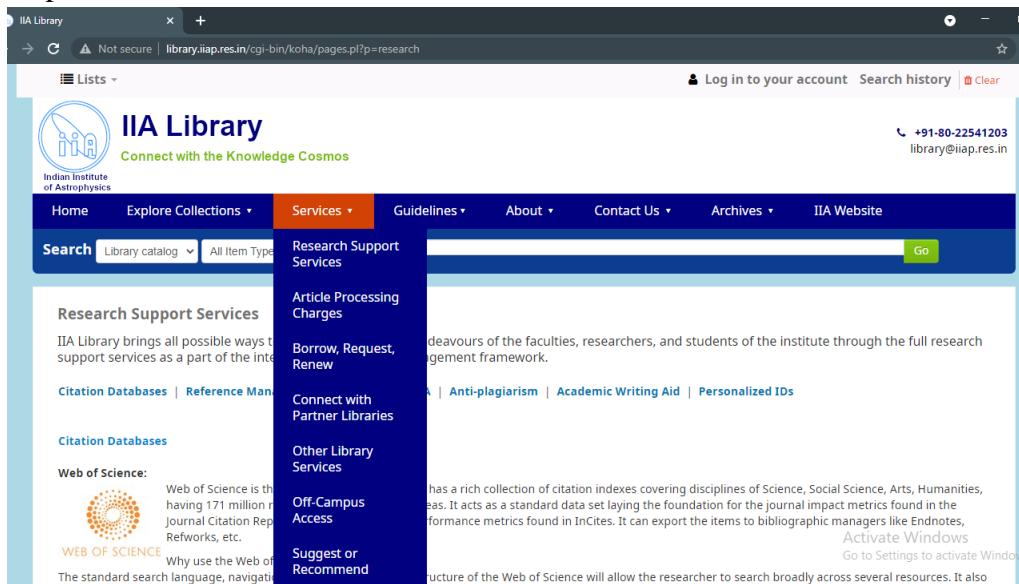


Figure 5: Snapshot showing hierarchical order of navigational options

- **Unity-** The new website is designed based on the integrated approach. The contents of the former website were dispersed to different web pages where users need to visit every time to the home page to check for the side navigation. But the new Koha based website offers the user a single click feel where the navigation bar is available for each of the web pages. The OPAC search box, institutional repository page, and IIA archive page are united under a single page to make it more users friendly.

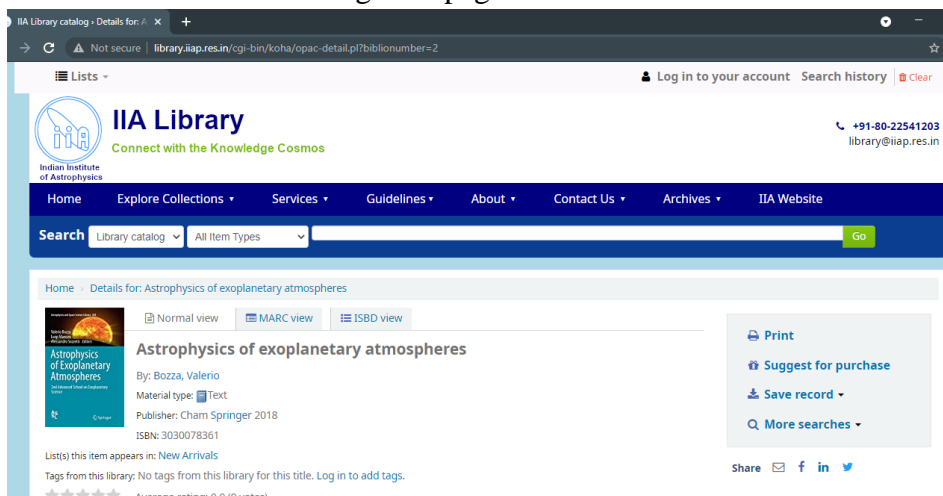


Figure 6: Snapshot showing single click feature in the navigation bar

- **Complexity-** Keeping the website interface simple was one of the main aims of the revamp process. It focuses on the cognitive fluency of the users i.e. the property of the



human brain that allows humans to think whatever is easy to think. Using moderate graphics to balancing the layout of the pages and grouping related terms under a single heading, allows the user to give a quick understanding of the information contained in the website. To keep the exposure effect high yet simple, headings are kept short and precise and information under most of the headings are numbered or bulleted. Coming to the tone of user instructions, it is kept more user-friendly than the typical referring/ command tone. Phrases like "Are you enjoying reading? Carry on here! We are helping you to continue reading the same item twice!" denotes the guidelines for the renewal of books.

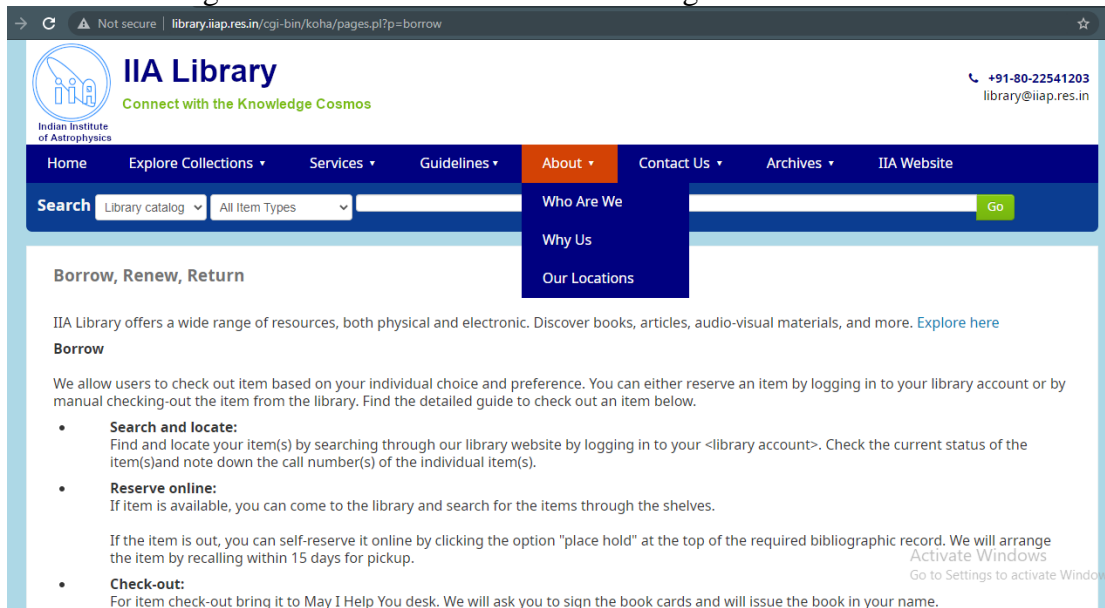


Figure 7: Snapshot showing simplicity in the flow of language used in webpage

- **Intensity-** Here we are considering the intensity of a website by the word count per page. Being a research library, major emphasis is given to research-based services. Maximum word count per page is found in research-based services like research support services, article processing charges, plagiarism check guidelines, other than the general library services. Whereas, the previous website lacks this intensity of content and a moderate and

similar kind of content is found for all the pages.

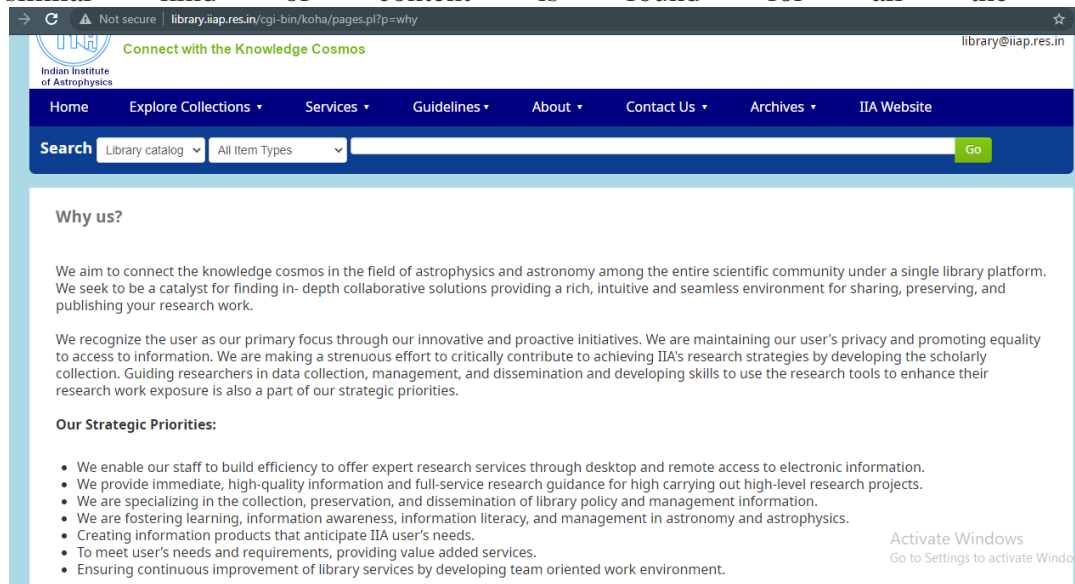


Figure 8: Snapshot showing word density in webpage

- **Novelty-** Novelty in web design denotes the unique features that it withstands in respect to other websites. Designing the website in a single automated platform, other than using any CMS is the primary novelty that the new website upholds. Other than these, the tone of user instructions is not typically formal as found in another library website of the Indian scenario.
- **Interactivity-** This factor is considered as the ultimatum to judge the effectiveness of a website as an information bearer. It acts as the bridge between the website as an information source and user satisfaction. Various studies suggests that interactivity is a facilitator that process information by eliminating and reducing the number of unnecessary information by proposing various communication features like bulletin boards, real-time chat, search engines etc. (Sicilia...et al., 2017). The "contact us" page displays a thread of FAQ's that refers the users to the exact solution to their query. It posses' intrinsic communication features like Ask a Librarian that allows users to undergo asynchronously as well as an asynchronous mode of communication through mailing, telephonic conversation and submission of query form. Systematic guidelines about the special collection for each station library are discussed in the "Our Location" under the "About Us" section. This extensive form of interactivity will be an effective guide to

access the required information in minimum time.

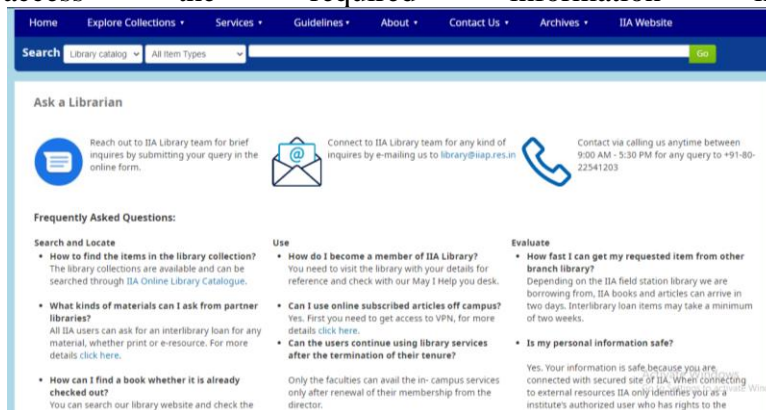


Figure 9: Snapshot showing ease of interaction in new webpage

## Planning and implementation

The planning of the website was a long term process that required unbiased analysis of the past and present scenario of the user needs. The comparative analysis of the immediate requirements of the scholars and faculties were analyzed through the long-term procedure of discussion. This analysis was not only based upon website access analytics but also on informal communication with all the library users of IIA. This involved a short discussion about the trend of research studies that helped the library team to analyse and modify their collection status. From these multiple discussions, the library team could identify the changes they need to make. Alleviating mostly into the research-based services and presenting those with the maximum exposure in the website forms the primary focus of planning strategy. The whole timeline of the entire project from planning to implementation of the demo version took almost a year starting from October 2020 to July 2020. The entire planning process is grouped into-

- Creating the wireframe of the website- the wireframe of the website gives the draft outline framework of the home page and the navigation bar. It looks very basic from a visual stand the point with a purpose to develop the layout of the entire website and to

determine how the navigational elements of the website can be integrated.

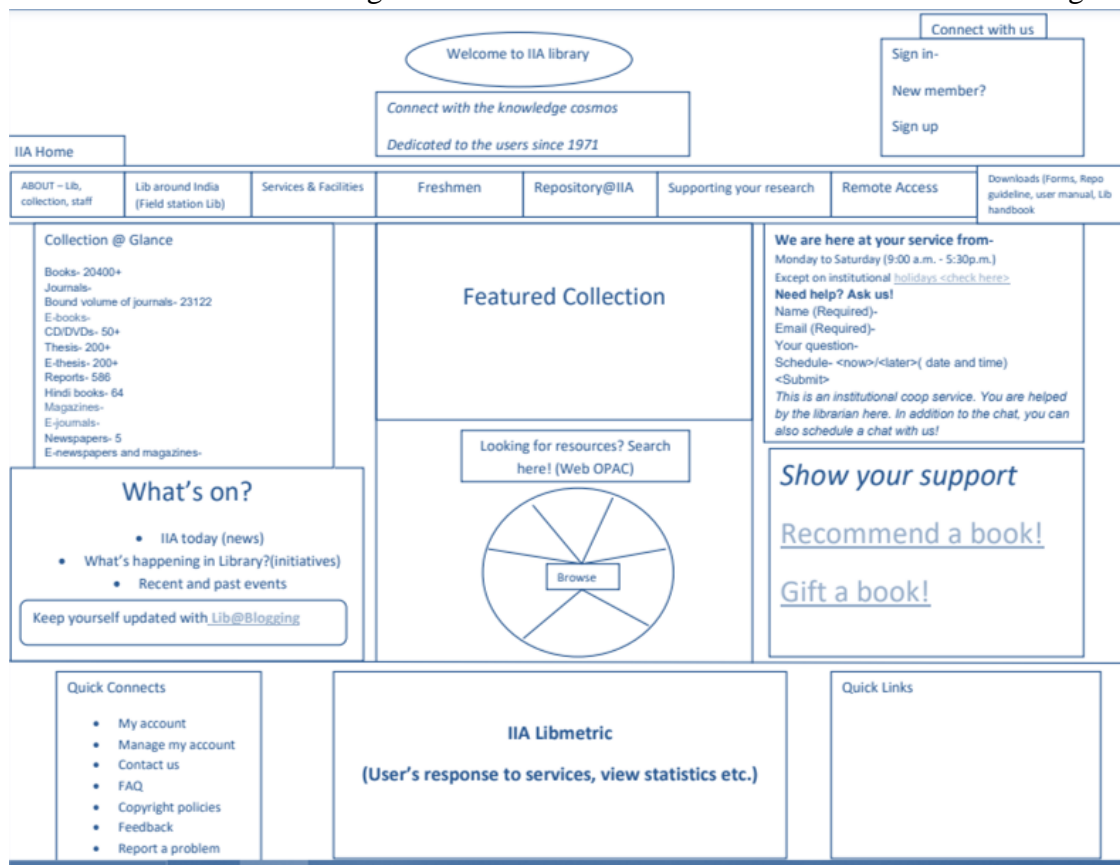


Figure 10: Proposed wireframe of the new homepage

- After setting the wireframe the focus was made to customize the top navigation bar as this was the common entity of the integrated platform of Koha. In this navigational wireframe, we can find multiple names from where the final word is extracted for a single

option to find the best appealing word which is short and precise.

**Top Navigation planned for our Library website (draft -1)**

Home	Explore Collections	Services	Downloads	Information and Policies	About	Contact us	Ask	IIA home
	Books	Borrow a book, Book a book or Online book renewalsBORROW, REQUEST, RENEW	Library membership form		Mission, vision and values	Ask a Librarian		
	Journals	Reading together	Plagiarism check request form		Library Strategic Priorities or Strategic Directions	Library Team		
	E-Journals	Support your research or Aid for your Research	Request for no dues		General rules	Library Advisory Committee		
	E-Databases	May I help you counter	User guidelines		Field station libraries	FAQ		
	E-Thesis	Newspaper clipping			Know about collection (Finding a Resource) About collections and search)			
	E-Books	Bulletin board			Library History			
	IIA Publications	Show your support (Recommend and Donate) Suggest a resource or Recommend a purchase			Know			
	Reports	Connect with Partner Libraries			WHO WE ARE			
	Hindi Collection	Search services			OUR VALUES			
	Latest addition	Alerting through mail			OUR ORGANIZATION			
		Connecting with other libraries (ILL)			Our Chronical			
		Other services (WiFi, Reprography, printing and document delivery						

Figure 11: Proposed top navigation with integrated options

- Creating content for the website- Based on the options decided for the top navigation bar the process of content creation was initiated. The entire process was initiated through online surfing of the list of best-ranked library website all around the world, then narrowing the search to websites using Koha. Finding the best design and content idea from the surfed website and checking compatibility with the IIA navigational wireframe was the next big step to follow. After finding the perfect match content was created for each option based on the nine-factor evaluative process as discussed before.
- Designing and customizing the content in Koha platform- Koha OPAC is mainly distributed in main six parts as Header, Left (Upper & Bottom) Navigation, Main User Block (The centre area of the OPAC where content will be written), Right Navigation and Footer. The IIA website customizes only to Header, Top navigation, Main User Block and Footer. All the customization in the Koha OPAC was made through the super librarian account that can access all the library functions by basic integration of HTML, CSS and Java. While inputting the commands every time the administrator needs to run the commands by saving the commands and going back to the OPAC page, refreshing it to check successful input of commands. Once the commands are inserted correctly, it will show the correct output. The simple customization of the OPAC will help the IIA users to potentially use the library website through Koha and at the same time, it will allow the users to find useful open access e-resource links in one platform. Here they can easily

search through a single click which will save the time of the users as well as they need not remember the URL for these e-resource platforms or databases.

- Formatting the data according to AACR2 rule that were in LibSys to make it compatible with Koha- The bibliographic data available in LibSys needed to be formatted to make it compatible with Koha in MARC format. The entire process of data formatting was carried out in step by step process.
  - ✓ At first all the bibliographic data were imported from LibSys to MS-Excel format.
  - ✓ Modification of the bibliographic elements in the data for each entry was done based on the MARC 21 tags.
  - ✓ During the process of modification, several new fields were incorporated like 245\$c (statement of responsibility), 110\$a (corporate author), 111\$a, 111\$n, 111 \$c, 111\$d (meeting name, number, date and place) etc.
- Data migration using MarcEdit- after formatting, the entire excel sheet was ready to be migrated into MARC format. The migration process was carried in the application software known as MarcEdit (Version 7). The MarcEdit interface contains a series of options from where we need to choose Delimited text translator. There we have to upload the source file (Excel sheet) to convert it into output file (.mrk file). The raw files of MARC are available in two formats, .mrk and .mrc, and Koha supports only .mrc file. After uploading mapping of the cataloguing fields to Marc tags are done to generate the combined .mrk file. This text translator converts the .xls to .mrk as any kind of modifications can be done in the .mrk file. Final step of data migration is the compilation of .mrk to .mrc and importing that .mrc file to Koha.



Figure 12: Interface of MarcEdit software

## **Conclusion**

The article is the culmination of the areas that a research library needs to undertake for the complete overhaul of its website from a CMS to a library automation platform. The in-depth evaluation of the former website provided clarity of work upon and areas that were improved in the entire revamp process. This resulted to bring more traffic in the website usage, achieving better loyalty, and improved navigation the users. The structured timeline of the entire project and guidelines followed helped the entire revamp team to launch the new website. The new website readily comprises of more responsive, secure and accessible web pages that help the revamp team to add or remove content to maintain a consistent look and feel effect across all the web pages. The study reports the website to deliver a user-friendly interface that allows quick identification of the problem. This work can be considered as the framework for any kind of website revamp from planning to its implementation.

## Appendix

### *Questionnaire on revamp of IIA library website*

1. General information:
  - a) Name:
  - b) Designation:
  - c) Location:
2. Considering a research library environment, which of the following would you support?
  - a) A CMS (Content Management System) enabled website having diversified navigational option like in Drupal
  - b) A website created in an integrated library automation software platform having single click navigational feature like Koha.
3. Do you think the new website will help in enhancing the aesthetic aspects like colour, fonts, simplicity, interactivity, etc.?
  - a) Strongly agree
  - b) Agree
  - c) Neutral
  - d) Disagree
  - e) Strongly disagree
4. The new website is designed on user-centric approach to facilitate enhanced access to library related information.
  - a) Strongly agree
  - b) Agree
  - c) Neutral
  - d) Disagree
  - e) Strongly disagree
5. Do you think the website revamp process would magnify the exposure to library services?
  - a) Strongly agree
  - b) Agree
  - c) Neutral
  - d) Disagree
  - e) Strongly disagree
6. The integrated navigational feature in Koha website will help in easy and access to information.
  - a) Strongly agree
  - b) Agree
  - c) Neutral
  - d) Disagree



- e) Strongly disagree
7. Do you feel the amount of text and images in the new website are meticulously used compared to the old website?
- a) Strongly agree
  - b) Agree
  - c) Neutral
  - d) Disagree
  - e) Strongly disagree
8. In the new website the flow and structure of the language are kept user-friendly with maximum avoidance of technical jargons. Do you believe it will help in cognitive fluency of the user (i.e. the property of human brain that helps to think whatever is easy to think)?
- a) Strongly agree
  - b) Agree
  - c) Neutral
  - d) Disagree
  - e) Strongly disagree
9. Do you think the new website emphasizes more on services based on research domain?
- a) Strongly agree
  - b) Agree
  - c) Neutral
  - d) Disagree
  - e) Strongly disagree
10. Do you think searching for resources in Koha (OPAC) is more easy and effective from both user end and by library professional as compared to LibSys?
- a) Strongly agree
  - b) Agree
  - c) Neutral
  - d) Disagree
  - e) Strongly disagree

Date:

Signature:

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